

WHAT IS CLAIMED IS:

1. An electromagnetic electroacoustic transducer,  
comprising:

a diaphragm made of a magnetic material;

5 a magnet for generating a magnetostatic field to make  
the magnetostatic field act on the diaphragm;

an electromagnetic coil for generating an oscillating  
magnetic field corresponding to an electric signal to make the  
oscillating magnetic field act on the diaphragm; and

10 a casing for storing the diaphragm, the magnet and the  
electromagnetic coil therein;

wherein the case has at least one first sound emitting  
hole through which a front space on a front surface of the  
diaphragm in the casing communicates with a front outer space  
15 in front of the casing and at least one second sound emitting  
hole through which a rear space on a rear surface of the diaphragm  
in the casing communicates with the front outer space in front  
of the casing; and

a resonant frequency  $Fv2$  of the rear space is set at a  
20 value in the range:

$$F0 < Fv2 \leq Fv1$$

in which  $F0$  is a resonant frequency of the diaphragm, and  $Fv1$   
is a resonant frequency of the front space.

25 2. The electromagnetic electroacoustic transducer

according to claim 1, wherein the resonant frequency Fv2 and the resonant frequency F0 have the relation:

$$Fv2 \geq 1.2 \times F0$$

5    3.    The electromagnetic electroacoustic transducer according to claim 1, wherein the resonant frequency Fv2 is set at a value near a frequency equal to an integral multiple of the resonant frequency F0.

10   4.    The electromagnetic electroacoustic transducer according to claim 1, wherein:

the resonant frequency Fv1 is set at a value near a frequency three times as high as the resonant frequency F0; and

15       the resonant frequency Fv2 is set at a value near a frequency twice as high as the resonant frequency F0.